

Applicant respectfully submits that 37 C.F.R. § 1.83(a) is a rule promulgated under, and governed by, 35 U.S.C. § 113, which states that the “applicant shall furnish a drawing *where necessary* for the understanding of the subject matter sought to be presented.” Here, the specification as filed includes sufficient description of the claimed embodiments for a person of ordinary skill in the art to construct Applicant’s invention without the aid of a diagram. Thus, it is not necessary that “the drawings must show every feature of the invention specified in the claims.” Accordingly, Applicant respectfully requests that the objection to the drawings based upon 37 C.F.R. § 1.83 (a) be withdrawn.

Applicant has submitted a revised Figure 4, to illustrate a specific embodiment described in the specification. This drawing depicts the configuration of elements described on pages 13-14 of the specification, and is thus fully supported by the specification. Accordingly, no new matter is presented by the substitution of Figure 4.

The Examiner further objected to the drawings because element (40) in Figure 4 was labeled as a phase modulator, rather than as a polarization transformer.

In the substitute Figure 4 submitted by Applicant with this Response, elements (40) are labeled as polarization transformers in accordance with the description in the text of the specification. Accordingly, Applicant respectfully requests that the objection to the drawings based upon the labeling of this element be withdrawn.

Claims 1-6 and 13-30 stand rejected under 35 U.S.C. § 103 (a) as unpatentable over Blake, U.S. Pat. No. 5,644,397, in view of Huang, U.S. Pat. No. 5,096,312. Applicant respectfully traverses this rejection.

As the Examiner asserts, Blake discloses source, fiber coil around a conductor, first and second directional couplers, and optical detector. The polarization transformers disclosed by Blake comprise fiber quarter wave-plates constructed by *splicing* in a length of fiber rotated by 45°. Blake ‘397, col. 3, line 66 - col. 4, line 3. Blake does not disclose the use of polarization transformers each comprising a birefringent fiber which is *twisted* through an angle about a central axis running therethrough, as recited in independent claims 1, 13, 19, and 25 of the present application.

Huang discloses a polarization transformer fabricated by simultaneously heating and twisting a length of birefringent fiber. The fabrication method described in Huang requires locally heating and spinning the fiber, while moving the heater down the length of the fiber. Huang, '312 col. 2, lines 2-13. The result is a fiber which is gradually twisted over a length of up to a few dozens of centimeters. Huang '312, col. 5, lines 46-50. A fiber manufactured according to Huang is effective as a transformer of *linearly polarized* light of unpredictable polarization orientation into linearly polarized light of known polarization orientation. Huang, '312, col. 3, lines 43-47.

Contrary to the Examiner's assertion, Huang neither teaches or suggests the use of a twisted fiber in place of the spliced fiber quarter-wave plates recited in Blake. Rather, Huang teaches away from this combination. If one were to use the polarization transformer of Huang in the current sensor described by Blake, the result would be *linearly polarized* light in the sensing coil. By contrast, independent Claims 1, 13, 19, and 25 of the present invention recite the use of polarization transformers, each comprising a birefringent fiber twisted through an angle about a central axis running therethrough at an appropriate distance from a first end of the fiber, the angle and distance chosen so that linearly polarized light entering a second end of the fiber exits the first end of the fiber *circularly polarized*. Therefore, there is no motivation to combine Blake and Huang in the manner suggested by the Examiner.

Applicant therefore respectfully requests that the rejections of independent Claims 1, 13, 19, and 25 be withdrawn.

With regard to dependent Claims 2-3 and 5, Applicant notes that these depend directly or indirectly from independent Claim 1. Therefore, these claims include the use of polarization transformers, each comprising a birefringent fiber twisted through an angle about a central axis running therethrough at an appropriate distance from a first end of the fiber, the angle and distance chosen so that linearly polarized light entering a second end of the fiber exits the first end of the fiber *circularly polarized*. As above, there is no motivation combine the current sensor of Blake with the twisted fiber of Huang, as Huang discloses a twisted fiber that would result in *linear polarization*. Therefore, Applicant respectfully submits that these claims are patentable for at least the same reasons as Claim 1, from which they depend. Similarly, claims 20-21 and 23 depend directly or indirectly from independent Claim 19, and are patentable for at

least the same reasons. Applicant therefore respectfully requests that the rejections of Claims 2-3, 5, 20-21, and 23 be withdrawn.

With regard to Claims 13-18 and 25-30, applicant notes that, like the claims discussed above, these claims recite the use of polarization transformers, each comprising a birefringent fiber twisted through an angle about a central axis running therethrough at an appropriate distance from a first end of the fiber, the angle and distance chosen so that linearly polarized light entering a second end of the fiber exits the first end of the fiber *circularly polarized*. Thus, as above, there is no motivation combine the current sensor of Blake with the twisted fiber of Huang, as Huang discloses a twisted fiber that would result in *linear polarization*. Applicant therefore respectfully requests that the rejections of Claims 13-18 and 25-30 be withdrawn.

Claims 7-12 also stand rejected under 35 U.S.C. § 103 (a) as unpatentable over Blake, U.S. Pat. No. 5,644,397, in view of Huang, U.S. Pat. No. 5,096,312. Applicant respectfully traverses this rejection. Independent Claim 7 recites the use of polarization transformers, each comprising a birefringent fiber twisted through an angle about a central axis running therethrough at an appropriate distance from a first end of the fiber, the angle and distance chosen so that linearly polarized light entering a second end of the fiber exits the first end of the fiber *circularly polarized*. There is no motivation combine the current sensor of Blake with the twisted fiber of Huang, as Huang discloses a twisted fiber that would result in *linear polarization*. Applicant therefore respectfully requests that the rejection of Claim 7 be withdrawn. Moreover, Claims 8-12 depend from Claim 7, and are therefore patentable for at least the same reasons. Applicants therefore respectfully request that the rejections of Claims 8-12 be withdrawn.

CONCLUSION

In view of the foregoing remarks, Applicant submits that the pending claims are in condition for allowance. Early and favorable reconsideration is respectfully solicited. The Examiner may address any questions raised by this submission to the undersigned at 617-832-1000. Should a further extension of time be required other than provided for, Applicant hereby

petitions for same and request that the extension fee and any other fee required for timely consideration of this application be charged to Deposit Account, **No. 06-1448**.

Date: January 23, 2003

Customer No: 25181

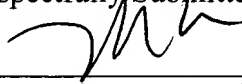
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Respectfully Submitted,



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